RAMA UNIVERSITY

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FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

Maturity Indices of Fruits

- Maturity (Commercial or Horticultural maturity): refers to the stage at which the produce is optimally accepted to the consumer.
- Maturity index: The maturity at harvest determines the quality and post- harvest shelf-life of the fresh fruits.
- The study of maturity indices helps to harvest the crop at right time.

Judging Maturity

- There are various means of judging maturity but they vary according to the kind of fruits, local soil and climatic conditions, but generally farmers follow visual means (appearance).
- But this is not a perfect method, many a times it may mislead the farmers.
- There are certain limitations for all maturity indices due to variation in nutrition of the crop, fruit shape, size, climate, seasonal factors, moisture, pruning method, use of hormones and other chemicals.
- We can use various indices to judge maturity.

Mango

1. Slight colour development on the shoulders.
2. When one or two ripe fruits fall from the tree naturally (tapka method).
3. Skin colour changes from dark green to olive green.
4. Counting of the days from fruit set to maturity.
5. When the specific gravity of fruits ranges between 1.01 to 1.02.
6. Flesh firmness.
7. Lenticels become more prominent and waxy bloom gradually disappears.
8. When the TSS reaches 11-15o Brix.
9. The first and second methods are not of much help since these are not representative of the fruit maturity of the entire tree and the fruits harvested do not ripe uniformly.

Matured Mango

This image is taken from wikipedia, the author of the image is "Fir0002/Flagstaffotos" flagstaffotos.com.au. We hightly attribute the work. The image is used for free learning educational work and not for any commercial purpose.

Banana

1. The fruits are harvested at different maturity level based on distance of transport.
2. For long distance transport 75-80% maturity and for short distance transport 90-100% maturity fruits can be harvested.
3. When the pulp peel ratio reaches 1.2 - 1.6.
4. Days taken from shooting, i.e., 3.0-3.5 months.
5. Disappearance of angularity of the fingers.
6. Brittleness of floral ends.
7. Drying of leaves in some varieties.

Matured Bananas

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Guava

1. Guava fruits generally take about 17-20 weeks from fruit set to reach maturity.
2. When the colour changes from dark green to light green.
3. When the specific gravity is one (1.0).

Grape

1. Grape is harvested when they reach a TSS of 16 to 24% depending on variety.

Bangalore blue : 12-14%
Anab-e-Shahi and Selection-7 : 16-18%
Thompson seedless : 20-22%

- Besides TSS, the following physical characteristics are also useful in judging maturity.
    1. Texture of pulp (softness).
    2. Peel colour (light yellow).
    3. Easy separation of the berries from the bunch.
    4. Development of characteristic flavour and aroma.

Papaya

1. For local market: When skin colour changes at the apical end of the fruit.
2. For long distance transport: When the skin colour changes from green to yellow to the extent of 6%.
3. When the latex of the fruit becomes almost watery.

Pineapple

1. For local market: When 25% of surface changes to yellow colour.
2. For long distance: When all the eyes are still green and have no trace of yellow colour (75-80%maturity).
3. Pineapples are harvested when the colour changes from green to greenish yellow.
4. The fruit develops a smooth surface around the eyes.
5. The flattening of eyes.
6. TSS:acid ratio of 21 to 27 and specific gravity of 0.98 to 1.02.

Jackfruit

1. A dull, hollow sound is produced when the fruit is tapped by the finger.
2. The last leaf of peduncle turns to yellow.
3. Fruit spines become well developed and widely spaced.
4. An aromatic odour develops.

Pomegranate

1. The fruits are ready for harvest between 135-170 days after anthesis.
2. The fruit colour changes in summer to dark yellow and in winter to dark red.
3. The persistent calyx at the anterior end of the fruit curves inward and become hard and dry at maturity.

4. Rind is very hard.

Sapota

1. The peel shows a dull orange or potato colour with a yellowish tinge when scraped.
2. The scurf content on the surface of the fruit will be minimum and easily fall off.
3. The content of milky latex drops to almost zero.

Citrus

1. Maturity indices differ among the citrus species/varieties.
2. Mandarins: When the rind colour changes from green to orange colour.
3. Sweet orange: When the rind colour turns to yellow.
4. Limes: When the rind colour changes to light green to yellow colour.
5. The International Standards Organization has set in minimum juice content of citrus as follows:
6. Washington navel oranges 30%
7. Other orange varieties 35%
8. Grape fruit 35%
9. Mandarin orange 33%
10. Lemons and limes 25%
11. For processing total juice content of the fruit is important.

Fig

1. When fruits become soft and wilt at neck.
2. Fruits hanging down from their own weight.
3. No milk exudation from the stem when the fruit is pulled off.

Custard apple

1. When the fruit turns to light green colour.
2. Development of yellowish white colour between the carpels.
3. Initiation of widening the gap between carpels or segments.

Ber

1. Attainment of full size of particular cultivar with softening of pulp.
2. Development of characteristic yellow or golden yellow colour.
3. Days to mature the fruits.

- Ex: In Delhi cv. Gola took only 150 days where as Tikadi requires 173 days to mature.

4. In cultivars like Gola, Kaithli and Umran , there was an increase in reducing and non-reducing sugars, total sugars and TSS.

Date Palm

1. It can be harvested at 3 different stages.

Sl. No.	Stage	Characteristics
1.	Doka (khalal)	Fruit becomes hard, yellow or pink or red, TSS- 30 to 45%, astringency present or absent depending on cultivar and edible stage.
2	Dang	Softness starting at tip of fruit, tannins and astringency disappears, lose

	(rutab)	weight and moisture content is about 35 – 40% and edible stage.
3	Pind (tamur)	Fully ripe fruit, lose weight, TSS- 60 to 84 % and edible stage.

Grape and Guava

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Grapes Guava

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Papaya, Pineaple and Jackfruit

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   In India:
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